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Investigation the effect of projectile charge and velocity on the fully differential cross-section of helium atom single ionization

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Abstract

In the present work, the effects of projectile charge and velocity on determining the dynamics of the single ionization process of a helium atom from its ground state have been investigated. For this purpose, H^+ , C^{6+} , Au^{53+} and U^{93+} ions have been used as the projectiles. In these calculations, the four-body continuum distorted wave formalism in the post form is used. The Silverman wave function as the ground state of helium atom has been used to consider the effects of static electron correlation. The fully differential cross section for each projectile in the scattering plane, for the various ejected electron energies and momentum transfers, are compared with the available experimental and theoretical results.

Keywords: Continuum distorted wave, Scattering cross section, Projectile charge, Single ionization.

For full article, refer to the Persian section